

## ABSTRACT

This abstract describes two new improvements in present production lines through use of laser-pierced smaller diameter holes in spinnerets through which viscous fluids flow and the addition of continuous wave or pulsed sonic generators at the rear of spinneret housings both of which produce irregularities in the surfaces of the smooth continuous synthetic filaments (nylon and kevlar for examples) to produce yarns and cords with increased cord-to-rubber bonding thus reducing tread separation in tries. The acid etching of steel wire used in tire manufacturing also increases wire-to-rubber bonding with further reductions in tread separation and increased tire life.

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